

Abstract

A pulse detonation engine (10) is provided with an
aerovalue (14) for controlling the pressure of injected
5 propellants (Ox, Fuel) in an open-ended detonation
chamber (26). The propellants are injected at such
pressure and velocity, and in a direction generally
toward a forward thrust wall end (16) of the detonation
chamber (26), an aerovalue (14) is formed which
10 effectively inhibits or prevents egress of the propellant
from the detonation chamber (26). A shock wave (34)
formed by the injected propellant acts, after reflection
by the thrust wall end (16) and in combination with the
aerovalue (14), to compress and conserve, or increase,
15 the pressure of the injected propellant. Carefully timed
ignition (28) effects a detonation pulse under desired
conditions of maintained, or increased, pressure.
Termination of the propellant injection serves to "open"
the aerovalue (14), and exhaust of the combusted
20 propellants occurs to produce thrust. Alternate
embodiments of propellant injection mechanisms (12, 112)
provide pulse valves (24, 122, 124) each having a fixed
slotted disk (40, 140, 240) and a rotating slotted disk
(42, 142, 242) to provide the desired high speed valving
25 of discrete pulses of propellant for injection.